

ABSTRACT OF THE DISCLOSURE

In accordance with an aspect of the invention, a substrate is placed within a plasma enhanced chemical vapor deposition reactor. A plurality of reactant gases are provided within the reactor proximate the substrate under high density plasma conditions effective to form a layer on the substrate. The conditions result in etching portions of the layer during its formation and thereby include a deposition to etch ratio of forming the layer. During the forming, the conditions are changed to change the deposition to etch ratio. In another aspect of the invention, the invention includes a semiconductor processing method of forming shallow trench isolation regions within a semiconductive substrate. Isolation trenches are formed within the semiconductive substrate. The substrate is provided within a plasma enhanced chemical vapor deposition reactor. A silane containing gas, an oxygen containing gas and an inert gas are injected into the reactor under high density plasma conditions effective to form a predominate SiO<sub>2</sub> comprising layer on the substrate to overfill the trenches. The conditions result in etching of portions of the layer during its formation and thereby includes a deposition to etch ratio of the forming SiO<sub>2</sub> comprising layer. During the forming, the conditions are changed to change the deposition to etch ratio.

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